

# Curriculum Vitae

## Personal Data:

Name: Pantea Davoudifar; Born: October 1, 1973

## Languages:

**Persian** (mother tongue) , **English** (Reading, Writing: Fluent, Speaking: Good);  
**Turkish** (Azari), **Türkçe** (Istanbuli: Understanding, Reading, Speaking; Good)

## Current Academic Job Title:

Assistant Professor,  
Research Institute for Astronomy and Astrophysics of Maragha (RIAAM), Iran

## Academic Degrees:

Ph.D., Astroparticle Physics, **Shahid Bahonar University of Kerman**, Kerman, Iran, 2010  
M. Sc., Astrophysics, **Shahid Bahonar University of Kerman**, Kerman, Iran, 2005  
B. Sc., Applied Physics, **Sharif University of Technology**, Tehran, Iran, 1998

## Dissertations:

Ph. D.: Analyzing the Origin of Antiprotons in Diffusion Model, Analyzing the Origin of Extragalactic Diffuse Gamma Rays; Supervisor: *Prof. Seyed Jalilaldin Fatemi*  
M. Sc.: Origin of Antiparticles in Cosmic Rays; Supervisor: *Prof. Seyed Jalilaldin Fatemi*

## Memberships and Achievements:

*Top student* of Master of Physics, Shahid Bahonar University of Kerman, 2002-2005  
The *superior researcher* of RIAAM (Research Institute for Astronomy and Astrophysics of Maragha) by 2015;  
Member of Editorial Board in *Applied Physics Research*;  
Peer Reviewer at *Journal of Classical and Quantum Gravity*;  
Peer Reviewer at *Iranian Journal of Science and Technology, Transaction A*;  
Peer Reviewer at *Journal of Research in Many Body Systems*;  
Peer Reviewer at *Global Journal of Science Frontier Research*;  
(*More than 50 peer reviewed papers*);  
  
Member of *Astronomical Society of Iran*;  
Member of *Physics Society of Iran*;

## Teaching:

B.Sc.: (At Shahid Bahonar University of Kerman, when I was MSc and PhD student, before 2010)

**General Physics I, II**;  
**General Physics for Engineering Students**;  
**General Physics for Biology Students**;  
**Analytical Mechanics I, II**;  
**Statistical Mechanics**;  
**Astrophysics**;  
**Quantum Mechanics I, II**;  
**Electricity and Magnetism I, II**;

**Analytical Mechanics I,II**; Azad University of Maragha; 2011

**Master: (At Research Institute for Astronomy and Astrophysics of Maragha as Assistant Professor, from 2011)**

**Advanced Statistical Mechanics;** Graduate course (Master);

**Computational Physics;** Graduate course (Master);

**Advanced Electrodynamics I, II;** Graduate course (Master);

**Physics of Pulsars;** Graduate course (Master);

**Elementary Particle Physics;** Graduate course (Master);

**Structure and Evolution of Galaxies;** Graduate course (Master);

**Physics Seminar;** Graduate course (Master);

**Special Topics (Astrophysics and Astroparticle Physics),** Graduate course (Master):

**Space Plasma;** Graduate course (Master); (Under the title of Special Topics)

**Cosmology;** Graduate course (Master); (Under the title of Special Topics)

**Advanced Astrophysics I, II;** Graduate course (Master); (Under the title of Special Topics)

**High Energy Astrophysics I, II;** Graduate course (Master); (Under the title of Special Topics)

**Interstellar Magnetic Fields;** Graduate course (Master); (Under the title of Special Topics)

**Physics and Astrophysics of Cosmic Rays;** Graduate course (Master); (Under the title of Special Topics)

**Ph.D:**

(Our Doctorate Program is project based PhD degrees, the students have 8 credit for their theoretical courses and 32-36 credits for their Thesis)

**Preparing the proposal of PhD;** (PhD):

**Special Topics (Astrophysics and Astroparticle Physics);** (PhD):

**Astroparticle Physics I, II;** (PhD); (Under the title of Special Topics)

**Cosmic Rays' Physics I, II;** (PhD); (Under the title of Special Topics)

**Cosmic Rays' Propagation Models;** (PhD); (Under the title of Special Topics)

**High Energy Astrophysics I, II;** (PhD); (Under the title of Special Topics)

**Space Plasma Physics;** (PhD); (Under the title of Special Topics)

**Electro-Magneto Hydrodynamics;** (PhD); (Under the title of Special Topics)

**Physics of Heliosphere;** (PhD); (Under the title of Special Topics)

**Elementary Particle Physics;** (PhD); (Under the title of Special Topics)

**Special and General Relativity;** (PhD); (Under the title of Special Topics)

**Cosmology;** (PhD); (Under the title of Special Topics)

**Dark Matter;** (PhD); (Under the title of Special Topics)

**Other courses:**

As I have been an academic staff just for 7 years, there are still courses that I can simply teach or I have been taught them as a teaching assistance when I was PhD and Master student:

**Physics General Labs (I, II);**

**Mathematical Physics I, II;**

**Special Relativity;**

**Modern Physics;**

**Spectroscopy;**

**Plasma Physics;**

**Cosmology and General Relativity**

**Quantum Physics I, II;** Graduate course (Master);

**Relativistic Quantum Mechanics;** Graduate course (Master);

**Mathematical Physics III;** Graduate course (Master);

**Special and General Relativity;** Graduate course (Master);

**Cosmology;** Graduate course (Master);

### **Teaching in the Workshops:**

**6th Advanced Workshop in Astrophysics, 10-15 September 2011;**

Subject: Astroparticle Physics,

Research Institute for Astronomy and Astrophysics of Maragha

**7th Advanced Workshop in Astrophysics, 18-23 August 2013;**

Subject: Astroparticle Physics,

Research Institute for Astronomy and Astrophysics of Maragha

**9th Preliminary Workshop in Astrophysics, 27 August-1 September 2012;**

Subject: Astroparticle Physics,

Research Institute for Astronomy and Astrophysics of Maragha

**10th Preliminary Workshop in Astrophysics, 27 August-1 September 2015;**

Subject: Dark Matter,

Research Institute for Astronomy and Astrophysics of Maragha

### **International Talks:**

**Invited Speaker at: 70<sup>th</sup> anniversary of Byurakan Astrophysical Observatory, 2016, 19-23 Sep, Armenia, Non-Stable Universe: Energetic Resources, Activity Phenomena and Evolutionary Processes,**

Title of Talk: Large Scale Magnetic Fields and Cosmic Ray's Propagation

### **PhD & Master Students:**

#### **First Supervisor of:**

##### Master Students:

Mrs Mohadese Seyfi Hossein Abadi, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"The Simulation of Galactic Magnetic Field and its Effect on Identifying the Galactic Sources of Very High Energy Cosmic Rays"**

**(Graduated in 2015)**

Mrs Neda Abtin Nia, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"Muons, their Astrophysical Origin and the methods of Muon Detection"**

**(Graduated in 2016)**

Mr Mohammad Hossein Talezadeh Lari, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"A Method of Evaluation of Photometric Infrared Redshift for Unknown Objects of IRAS PSF/FSC Catalogue"**

**(Graduated in 2017)**

Mrs Vajihe Sabzali, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"The effect of merging on radio activity of AGN in galaxy groups"**

**(Graduated in 2017)**

#### **PhD Students:**

Dr. Zahra Bagheri, PhD Degree, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"The Effect of Solar Particles on Satellites and Their Electronical Components"**

**(Graduated in 2017)**

Dr. Milad Shayan, PhD Degree, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"The Study of Forbush Effect and Study of Changes in particle's fluxes near the Earth due to Solar Activity"**

**(Graduated in 2017)**

Dr. Majid Lashkanpour, PhD Degree, Research Institute for Astronomy and Astrophysics of Maragha;

Title of Thesis: **"The effect of Solar Storms on Satellite Orbits"**

## **(Graduated in 2017)**

Mr Fakhaldin Akbarian, PhD Student, Research Institute for Astronomy and Astrophysics of Maragha;  
Mr Abbas Eslami Shafigh, PhD Student, Research Institute for Astronomy and Astrophysics of Maragha;  
(is going to graduate by the end of next semester)

### **Advisor of:**

Mr. Hojat Dehghani, PhD Student, Shahid Bahonar University of Kerman;  
(is going to graduate by the end of this semester)

Dr. Saied Doostmohamadi, PhD Degree, Shahid Bahonar University of Kerman;  
**(Graduated in 2014)**

Mr. Majid Jalalabadi, Master Degree, Shahid Bahonar University of Kerman;  
**(Graduated in 2012)**

### **Programming and Application skills:**

Linux (Ubuntu),  
IDL, Fortran programming, C++  
SSW (under Linux),  
CORSIKA simulation,  
FLUKA Simulation,  
CERNROOT,  
Scikit-Learning,  
CRPropa,  
GALPROP,  
AIPS,  
AstroImageJ,  
ENZO,  
Neural Network under MATLAB,  
SVC,  
Others such as: Microsoft Office, LaTeX, ...

### **Field of Research Activities:**

#### **Theoretical Studies on:**

“Propagation Models of Cosmic Rays”;  
“The Origin of Antiparticles Observed in Cosmic Rays”;  
“The Origin of Very High Energy Cosmic Rays in Top-Down and Bottom-Up scenarios”;  
“The Effect of Solar Particles (especially particles from CMEs and Flares) on Satellite orbits and onboard computers devices”;  
“Pulsar Origin of High Energy Cosmic Rays”;  
“Modelling the Galactic Magnetic Field”;

#### **Simulations Studies related to:**

“Galactic and Extragalactic Magnetic Fields”;  
“Time Delays of UHE Cosmic Rays in the Magnetic Fields”;  
“Phenomenological Studies of High and Low Energy Primary Particles Initiating EASs, LDFs and ...”  
“Fluorescent light by Extensive Air Showers”  
“Solar neutrons in vicinity of the Earth”

#### **Current Research Proposals:**

“Project Number 92/900/900/1122 with Iranian Space Agency”;  
“Time Delays and the Origin of Very High Energy Cosmic Rays”;  
“The Residence Time of Galactic Cosmic Rays in Different Propagation Models”;  
“Theoretical Studies for Indirect observation of WIMP”  
“The Study of Galactic, Extragalactic and Galaxy Cluster's Magnetic Fields”;

“The Study of Solar Modulation and its Effects on Observed Antiprotons of Cosmic Rays”;  
“CORSIKA Simulation and Studies for Yakutsk Array Data”;  
“Possibility of a Proton Flux from Coma Supercluster Direction”;  
“A Pulsar Origin of Very High Energy Cosmic Rays”

**Contact Info:**

Research Institute for Astronomy and Astrophysics of Maragha, PO Box: 55177-36698,  
Maragha, Eastern Azarbaijan, Iran; Phone: 0098-41-37412222; Fax: 0098-41-37412224;  
Mobile: 0098-9123438012 ; 0098-9127950661; Email: p\_davoudifar@yahoo.com; Official Site: [www.riaam.ac.ir](http://www.riaam.ac.ir)

## Complete list of publication of Pantea Davoudifar

### Monograph:

**1- Contributed Author** in: “New Researches in Astronomy, Astrophysics and Cosmology” to be published by *Sharif University of Technology, Dr. Jafar Aghayani Chavoshi*; Topic: “Modeling the Galactic Magnetic Field and its Application in Analyzing UHECR Sources”, to be published in **2018**

**2- Contributed Author** in: “Non-Stable Universe: Energetic Resources, Activity Phenomena and Evolutionary Processes”, (2017): “Magnetic Fields at Large Scales and Their connection with Ultra High Energy Cosmic Rays”, *Astronomical Society of the Pacific Conference Series*, 511, 246

### Further publications:

#### A) Publications with peer review process

**1. Davoudifar P.**, Fatemi S. J., (2009): “Detailed analysis of observed antiprotons in cosmic rays”, *Iranian Journal of Physics Research*, 9, 51-54

**2. Davoudifar P.**, Fatemi S. J., Clay R., & Whelan B., (2011): “Time Delays in Cosmic Ray Propagation”, *Journal of Sciences, Islamic Republic of Iran*, 22(1): 75-84

**3. Davoudifar P.**, & Fatemi S. J., (2011): “Extragalactic Gamma Ray Excess from Coma Supercluster Direction”, *Journal of Astrophysics and Astronomy*, 32: 359-370

**4. Davoudifar P.**, and Rowshan Tabari K., (2013): “A simulation based study of maximum development of extensive air showers in highest energies”, *Journal of Physics: proceedings series*, 410:012087

**5. Davoudifar P.**, and Rowshan Tabari K., (2014): “Modelling the Galactic Magnetic Field and its Application in verifying a Pulsar Origin of Very High Energy Cosmic Rays”, *Journal of Physics: proceedings series*, 490:012029

**6. Davoudifar P.**, and Rowshan Tabari K., “Statistical Study of Extensive Air Showers and the Question of Mass Composition”, *Astronomy Letters*, 40(12): 821-828

**7. Shayan M.\***, **Davoudifar P.**, and Ajabshirizadeh A., (2016): “A Study of Forbush Effect during Halloween Storm”, *Iranian Journal of Science and Technology, Transactions A: Science*, 40(3), 177–181

**8. Davoudifar P.**, and Rowshan Tabari K., (2015): “The Effect of a Non-Isotropic Flux of Very High Energy Cosmic Rays on the values of Mean Shower Maxima”, *Journal of Physics: proceedings series*, 574(1):012098

**9. Davoudifar P.**, and Rowshan Tabari K., (2015): “Development of a Galactic Magnetic Field Model and its Application in Identifying Sources of Ultra-High-Energy Cosmic Rays in Northern Sky”, *Journal of Physics: proceedings series*, 633(1):012055

**10. Davoudifar P.**, (2016): “Modelling a Kolmogorov-Type Magnetic Field in the Galaxy and its Effect on an Extragalactic Isotropic Flux of Ultra High Energy Cosmic Rays”, *Journal of Physics: proceedings series*, 738(1):012035

**11. Molaverdikhani K.**, Ajabshirizadeh A., **Davoudifar P.**, Lashkanpour M.\*, (2016): “Complexity of the Earth’s space-atmosphere interaction region (SAIR) response to the solar flux at 10.7 cm as seen through the evaluation of five solar cycle two-line element (TLE) records”, *Advances in Space Research*, 56(6): 924-937

12. Bagheri Z.\*, **Davoudifar P.**, Ajabshirzade A., and Shayan M.\*(2016): , “The Effect of Solar Particles in the Choice of Alloy Shielding in a Satellite”, *Iranian Journal of Astronomy and Astrophysics*, 3(1), 65-74
13. Bagheri Z.\*, **Davoudifar P.**, Rastegarzade G., Shayan M.\*, (2017): “Application of CORSIKA simulation code to study Lateral and longitudinal distribution of fluorescence light in Cosmic Ray Extensive Air Showers”, *Journal of Astrophysics and Astronomy*, 38:4
14. Bagheri Z.\*, **Davoudifar P.**, Ebadi H., (2017): “Simulation of Proton Flux in Different Cycles and during Solar Flares”, *Journal of Research on Many Body Systems*, 7:203
15. Shayan M.\*, **Davoudifar P.**, Bagheri Z.\*, (2017): “The Study of Variations of Low Energy Cosmic Helium’s Flux (up to 6 MeV) due to Solar Activity”, *Advances in Space Research*, 59:2,186–2191
16. Dehghani H.\*, Fatemi S.J, **Davoudifar P.**, (2017): “Studying depth of shower maximum using variable interaction length”, *Astrophysics and Space Science*, 362:89

#### Conference papers with peer review process

17. **Davoudifar P.**, (2011): “Time Delay, Deflection Angle and the Possible Origin of the Highest Energy Cosmic Rays”, *Proceeding of 32th International Cosmic Ray Conference*, Beijing, 2: 230-234
18. Bagheri Z.\*, **Davoudifar P.**, (2015): “Evaluation the Effect of Energetic Particles in Solar Flares on Satellite Electronic Computer’s lifetime”, *Proceedings of first Armenian-Iranian Astronomical Workshop, 13-16 october 2015, Byurakan, Armenia*, 137-142
19. Sabzali, V.\*, **Davoudifar, P.**, Mickaelian, A., (2015): “The Study of Relativistic AGN Jets and Experimental Survey of AGN Properties”, *Proceedings of first Armenian-Iranian Astronomical Workshop, 13-16 october 2015, Byurakan, Armenia*, 233-238
20. Talezade Lari, M.H.\*, **Davoudifar, P.**, Mickaelian, A., (2015): “The Interrelationship Between Interactions/Merging, Starburst and AGN Phenomena based on IR Sample”, *Proceedings of first Armenian-Iranian Astronomical Workshop, 13-16 october 2015, Byurakan, Armenia*, 213-218
21. **Davoudifar P.**, Fatemi S. J., & Arjomand Kermani H., (2010): “The Origin of Diffuse Gamma Ray Continuum on the Northern Hemisphere: The Results”, *Proceedings of 13th Research Meeting on Astronomy*, IASBS, 157-161
22. **Davoudifar P.**, (2011): “The Results of a Simulation of Galactic and Extragalactic Magnetic fields and the Origin of the Highest Energy Cosmic Rays”, *Proceedings of 15th Research Meeting on Astronomy*, IASBS, 221-225
23. Abbassi A.\*, and **Davoudifar P.**, (2012): “A preliminary study of number density variations of Muon and Electron with zenith angle changes in Extensive Air Showers(low energy ranges)”, *Proceedings of 16th Research Meeting on Astronomy*, IASBS, 78-81
24. **Davoudifar P.**, and Rowshan Tabari K., (2012): “A Survey on Artificial Changes of EAS Parameters Around 1019 eV due to Zenith Angle Changes”, *Proceedings of 16th Research Meeting on Astronomy*, IASBS, 123-127
25. Abbassi A.\*, and **Davoudifar P.**, (2012): “A study of Muon and Electron numbers on observation level due to changes of zenith angle in Extensive Air Showers”, *Proceedings of Iran Annual Physics Conference*, 1118-1122
26. **Davoudifar P.**, and Lashkanpour M.\*, (2013): “The Effect of Solar Cosmic Rays on Satellites, (a preliminary study)”, *Proceedings of 17th Research Meeting on Astronomy*, IASBS, 241-245
27. Shayan M.\*, **Davoudifar P.**, and Ajabshirzade A., (2013): “A Study of Forbush effect In Solar Event of Halloween Storm”, *Proceedings of 3rd Iranian National Meeting of Space Radiations*, 151-155
28. **Davoudifar P.**, and Rowshan Tabari K., (2014): “The component of the perturbing acceleration of a Satellite due to solar energetic particles”; Its order of magnitudes and its relation by Solar flare types, *Proceedings of the 7th National Meeting of Astronomy and Astrophysics of Iran*, SBUK, 171-175
29. Shayan M.\*, **Davoudifar P.**, and Ajabshirzade A., (2014): “A Study of Forbush effect In Solar Event of September 2005”, *Proceedings of the 7th National Meeting of Astronomy and Astrophysics of Iran*, SBUK, 176-180

30. Bagheri Z.\*, **Davoudifar P.**, (2015): “Considering the effect of solar flares in the choice of alloy shielding in satellites”, *Proceedings of 2nd International Conference of Recent Trends in Science, Engineering and Technology*, Istanbul
31. Bagheri Z.\*, **Davoudifar P.**, and Ajabshirizade A., (2015): “A Simulation Based Evaluation of Local Fluxes of Secondary Cosmic Rays at Tehran”, *Proceedings of the 9th National Meeting of Astronomy and Astrophysics of Iran*, AUT, 1-9
32. **Davoudifar P.**, Pulsars, (2015): “Galactic Magnetic Fields and High Energy Cosmic Rays: A Correlation Analysis of Cosmic Rays’ Galactic Directions and the Directions of Their Galactic Sources; First Part: The Northern Hemisphere”, *Proceedings of Iran Annual Physics Conference*, 884-889
33. Seyfi M.\*, **Davoudifar P.**, (2015): “The Effect of Magnetic Halo on Anisotropy of Ultra-High-Energy Cosmic Rays”, *Proceedings of Iran Computational Physics Conference*, 221-225
34. Bagheri Z.\*, **Davoudifar P.**, (2015): “Evaluation of the maximum generated neutrons into a flying airplane deduced by cosmic ray protons”, *Proceedings of Modern Achievements on Aerospace and Related Sciences*, 143-147
35. Seyfi M.\*, **Davoudifar P.**, (2016): “The Study of Correlation between the Direction of Very High Energy Cosmic Rays and Galactic milliseconds Pulsars, Under the Influence of a Turbulent Magnetic Field in Galactic Halo”, *Proceedings of 19th Research Meeting on Astronomy*, IASBS, 161-165
36. Talezade Lari, M.H.\*, **Davoudifar P.**, Mickaelian, A., (2016): “Declassing Stars and Galaxies in IRAS PSC/FSC catalogue using Neural Networks (SVM)”, *Proceedings of 19th Research Meeting on Astronomy*, IASBS, 122-126
37. **Davoudifar P.**, Abtin Nia, N.\*, (2017): “A simulation of local Muon Flux and its Verification using a Charged Coupled Device”, *Proceedings of Annual Physics Conference*, Yazd University, 303-306

#### **B) Submitted publications with peer review process**

#### **C) Publications without peer review process**

#### **D) Submitted manuscripts without peer review process**

#### **E) Patents**

#### **F) Precontracts with publishers**

- **Monograph number 1, is going to be published by Sharif University of Technology in Persian language.**
- **Publications: A1 and A2 have evolved from my doctoral dissertation,**
- **The following above mentioned publications are conference papers with peer review processes:**

A17, A18, A19, A20

- **The following above mentioned publications were presented in Persian language and have no online electronic versions, but they are conference papers with peer review processes:**

A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36

- **Contributed Authors marked with a \*, are my PhD, and Master Students as mentioned in completed C.V.; in our institute the student’s name comes before her/his supervisor’s name.**
- **Duplicate publications (presented in conference and published with a journal later) were removed.**